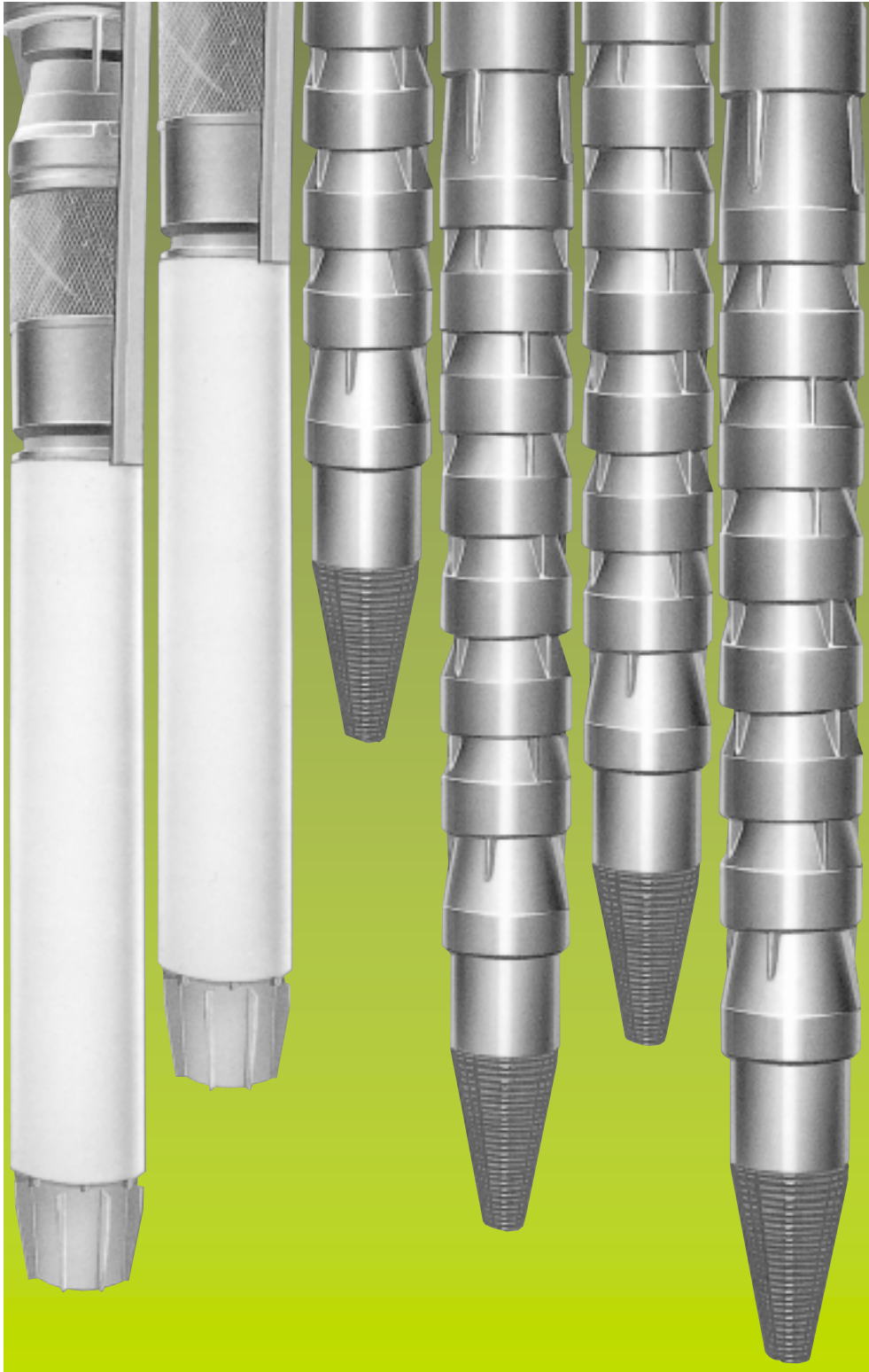


VML-VMS

**Giles & Gaskin vertical turbine pumps
multistage lineshaft and submersible for
offshore, industrial & borehole services**



Thompsons Kelly & Lewis

A worldwide reputation for quality.

Two types of Thompsons, Kelly & Lewis vertical turbine pumps may be employed to pump water from a well or borehole – the VML vertical lineshaft unit or the VMS submersible pump.

The traditional VERTICAL LINESHAFT PUMP has a driver mounted at the surface and connected to the pump by lengths of column and shafting. This method is well proven and reliable, provided that – the bore is straight with no deflections and, – the depth of the bore does not exceed certain limits. Beyond these limits, the cost of

additional column and shafting coupled with increased installation charges, may render the entire project uneconomical.

The SUBMERSIBLE PUMP on the other hand, consists of a pump unit direct coupled to a fully submersible electric motor, and the whole assembly is lowered into the bore and is suspended by its discharge pipe. The motor is fed by a submersible, electric cable which is run up the outside of the discharge pipe and is clipped to it at suitable intervals. The electric motor is cooled by passage of the water in the bore and both the

pump and motor are normally water-lubricated.

The submersible pump has several advantages – fewer wearing parts due to the fact that there is no lineshaft or discharge head gear; the motor requires no surface level pump house; the unit is silent in operation and is vandal proof; the pump is unaffected by surface conditions; installation costs are very economical and deep bore settings are therefore far less costly than comparable vertical lineshaft units.



PUMP SIZE	OLD PUMP MODEL REFERENCE	50Hz		60Hz		IMPELLER TYPE	RENEWABLE WEAR RINGS	MINIMUM INSIDE BORE CASING DIAMETER REQUIRED	
		SPEED r/min	MAX No. OF STAGES	SPEED r/min	MAX No. OF STAGES			mm	Inches
100 HC	-	2900	35	3500	24	Open		127.0	5.00
4K2L	-	2900	35	3500	24	Open		127.0	5.00
110 HC	-	2900	35	3500	24	Open		127.0	5.00
130 LC	5 LC	2900	25	3500	17	Open		153.8	6.06
130 MC	5 MC	2900	25	3500	16	"		153.8	6.06
130 HC	5 HC	2900	25	3500	16	"		153.8	6.06
130-5	-	2900	25	3500	17	Enclosed	Front Bowl	153.0	6.02
6K1HA	-	2900	20	3500	13	Open		153.0	6.02
140 LC	6 LC	2900	20	3500	15	Open		153.0	6.06
140 MC	6 MC	2900	20	3500	15	"		153.0	6.06
140 MH	-	2900	20	3500	13	"		153.0	6.06
140 HC	6 HC	2900	22	3500	16	"		153.0	6.06
7K4H	-	2900	7	3500	4	"		205.0	8.07
8K1MA	-	2900	8	3500	5	Open		205.0	8.07
180 LC	7 LC	2900	10	3500	7	Open		205.0	8.07
180 MC	7 MC	2900	12	3500	8	"		205.0	8.07
180 HC	7 HC	2900	13	3500	8	"		205.0	8.07
180-10	-	1450	40	1750	20	Enclosed	Front Bowl	205.0	8.07
	-	2900	12	3500	8	"	"	205.0	8.07
180-12	-	1450	40	1750	25	"	"	205.0	8.07
	-	2900	12	3500	8	"	"	205.0	8.07
180-18	-	1450	40	1750	25	"	"	205.0	8.07
	-	2900	12	3500	8	"	"	205.0	8.07
190 HC	7 HHC	2900	11	3500	7	Open		205.0	8.07
240 HC	10 HC	1450	15	1750	10	Open		257.4	10.14
	-	2900	6	3500	4	"		257.4	10.14
10K3M	-	2900	6	3500	4	Open		254.0	10.00
10K3MH	-	2900	5	3500	3	"		254.0	10.00
240-40	1004 H	1450	15	1750	10	Enclosed	Front Bowl & Imp	254.0	10.14
	-	2900	4	3500	3	"	"	254.0	10.14
290-50	12K5H	1450	4	1750	3	Enclosed	Front Impeller	307.1	12.09
1203 NLA	-	1450	13	1750	8	Enclosed	Front Bowl	355.0	14.00
1203 WLA	-	1450	9	1750	6	"	"	355.0	14.00
340-H	1404H	1450	4	1750	3	Enclosed	Front Bowl	360.0	14.17
380 LC	16 LC	1450	7	1750	5	Open		400.0	15.71
380 MC	16 MC	1450	7	1750	6	"		400.0	15.71
380-20	-	1450	7	1750	5	Enclosed	Front Bowl	400.0	15.71
385-40	1603 MA	1450	4	1750	3	Enclosed	Front Bowl & Imp	405.0	15.94
450-50	1804 HA	1450	4	1750	3	Enclosed	Front Impeller	500.0	19.70
20 DMH	-	1450	4	1750	3	Enclosed	Front & Back Bowl & Impeller	540.0	21.20

Note - The above bore casing dimensions are based on ANSI B36-10 linepipe with an INSIDE diameter size. If the bore is to be lined with Australian Water Bore Casing, please check correct sizing with your nearest TKL sales office to ensure that the selected pump and submersible motor will fit and the correct flow limitations are achieved.

Special Materials

Pumps can be supplied in virtually any metallurgy, to suit the variety of construction materials required for pumps operating in a working environment of saltwater composition and temperature.

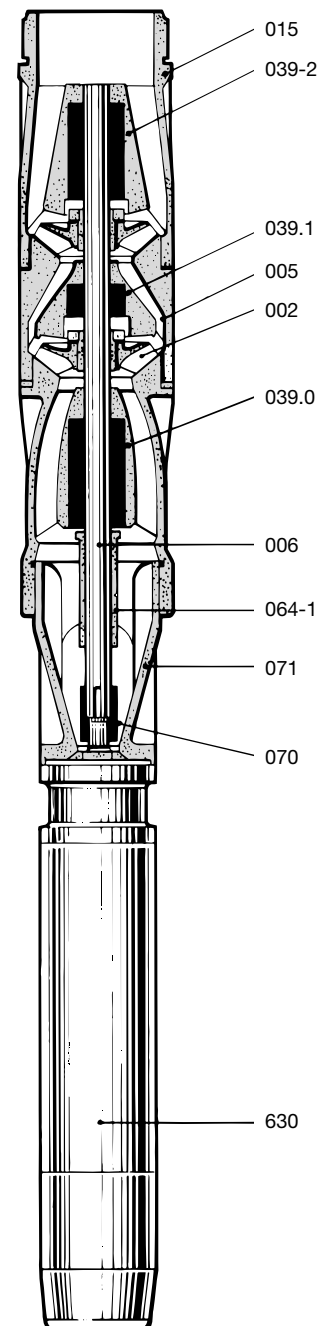
We offer different grades of stainless steels, duplex stainless steels, ferralium etc.

VMS

Vertical Multistage Submersible Pump Standard Features

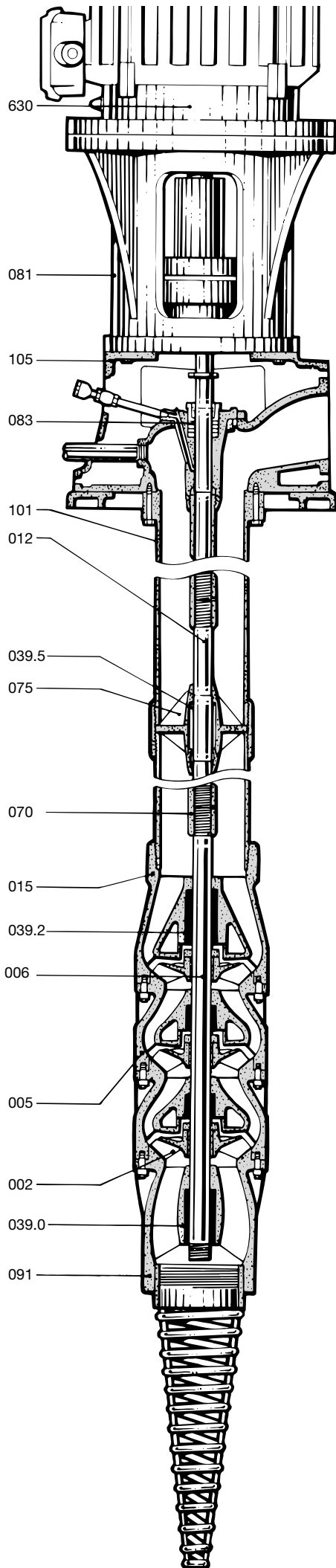
- 006 PUMP SHAFT Sturdily proportioned for strength and reliability, and produced in AISI431 corrosion-resistant stainless steel. The shaft is keyed at the motor end to ensure positive location in the shaft coupling.
- 005 PUMP BOWLS Designed to advanced hydraulic practice, the pump bowls are manufactured in close-grained cast iron or bronze. Careful machining of the bowls to exacting tolerances ensures accurate alignment of rotating components.
- 039-1 PUMP BOWL BEARING A combination water lubricated bronze and fluted rubber bearing fitted to the pump bowls.
- 039-0 SUCTION BOWL BEARING Designed with durability in mind, this long, water lubricated bronze bearing ensures that vibration and shaft deflection are minimised for smoother pump performance.
- 071 ADAPTOR Manufactured in bronze, the adaptor is machined to close

- tolerances to ensure positive, accurate alignment between pump and motor. A stainless steel mesh strainer is incorporated in the adaptor to protect the pump from debris damage.
- 630 SUBMERSIBLE ELECTRIC MOTOR A top quality, squirrel cage, fully submersible electric motor is fitted.
- 015 DISCHARGE BOWL Available in cast iron or bronze, with screwed BSP or flanged pipe connection. Inline non-return valve can be fitted to this bowl.
- 039-2 DISCHARGE BOWL BEARING Produced in bronze, the water lubricated bearing is extra long for increased shaft stability and a longer working life.
- 002 IMPELLERS Semi-open or enclosed type, designed for maximum hydraulic performance, produced in bronze or cast iron, hand finished and precisely balanced for a smooth-running, efficient life. Special tapered sleeves and locknuts securely lock the impellers to the pump shaft.
- 064-1 SAND COLLAR A bronze sand collar protects the suction bowl bearing from being damaged by abrasive particles entering the pump.
- 070 SHAFT COUPLING Produced in corrosion resistant stainless steel, the coupling securely connects the keyed pump shaft to the splined motor shaft, conforming to NEMA standards.



VML

Vertical Multistage Lineshaft Pump Standard Features



630 DRIVER Depending on drive arrangement either solid shaft or hollow shaft electric motor or right angle gear drive or a combination drive.

081 FLEXIBLE COUPLING ASSEMBLY Designed to suit a standard vertical flange mounted electric motor and incorporates heavy duty grease lubricated ball bearings to support the mass of the pump rotating element, a non-reverse ratchet mechanism to protect the pump from damage by reversal when the unit is stopped and an adjusting nut to allow for impeller wear.

083 STUFFING BOX Fitted with high grade packing and fully adjustable gland. Incorporating a grease-lubricated head shaft bearing, the stuffing box assembly is positioned above ground level for ease of accessibility.

Alternative stuffing box arrangements are available, such as high pressure type or mechanical seal.

105 SURFACE DISCHARGE HEAD Heavy duty construction, cast in close-grained iron easily supports mass of pump and driver. Mounting flange conforms to NEMA standards. Top column pipe locates on a spigot in the discharge head for accurate alignment. Large hand-holes allow ready access to gland assembly. A detachable adaptor flange tapped BSP is supplied on the discharge opening.

101 COLUMN PIPE Heavy-duty mild steel column pipes are cut to precise lengths for ease of handling. Column threads and end facings are machine cut simultaneously at both ends of each pipe length, to ensure perfect alignment. Column couplings, depending on size, are accurately machined from S.G. iron or extra-strong seamless tubing.

Columns are also available with bolted flanges that can be epoxy coated to prevent corrosion.

012 PUMP LINESHAFT Manufactured from smooth-ground stainless steel in 1.5 or 3m lengths.

039-5 COLUMN BEARINGS Water lubricated, removable elastomer bearings are fitted as standard for vibration-free, reliable performance.

075 BEARING RETAINERS Produced in cast bronze, streamlined for minimal fluid friction losses. Accurately machined to form watertight, perfectly-aligned joint between column pipes.

070 SHAFT COUPLING High strength couplings are internally machined with left-hand thread forms to prevent unscrewing of shafts.

039-2 DISCHARGE BOWL BEARING The extra-long fluted elastomer bearing provides durable operation.

005 SUCTION, PUMP & DISCHARGE BOWLS 015 091 Produced in either close-gained cast iron or bronze. Hydraulically efficient design promotes smooth passage of liquids with minimal friction. Precise machining of the bowls ensures accurate alignment of rotating components.

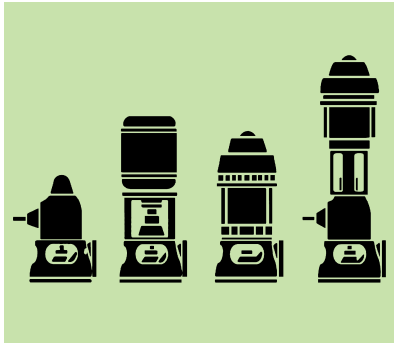
002 IMPELLERS Designed to advanced hydraulic practice and cast in bronze, the semi-open or enclosed type impellers are individually handfinished and balanced for vibration-free performance. The impellers are secured to the shaft using special tapered sleeves and locknuts. Above ground adjusting nut simplifies compensation for wear on impellers.

039-0 SUCTION BOWL BEARINGS An extra-long water lubricated fluted rubber bearing is standard. For an extra cost all pump models can be fitted with a grease lubricated sealed-for-life bronze bearing. A special sand collar on top of the bearing acts as a centrifugal separator.

OIL LUBRICATION For certain corrosive and/or abrasive applications, oil lubrication of the pump bearings can be provided. A heavy steel shaft enclosing tube is screwed into a special discharge bowl casting containing a bronze bearing.

The shaft enclosing tube extends through the discharge head and is positively located by a tension nut. Tube sections are connected by bronze couplings which function as combined tube couplings and shaft bearings. An automatic or manual oil lubrication system supplies measured quantities of oil via the tension nut into the enclosing tube.

Types of Drives



RIGHT ANGLE GEAR DRIVES
This configuration can be powered using flexible couplings, a vee-belt drive arrangement, or direct driven through an universally-jointed drive shaft.

SOLID SHAFT ELECTRIC MOTOR
Solid shaft motor is fitted with a flexible coupling assembly of ample dimensions to ensure long, satisfactory service. The impeller wear adjusting nut forms an integral part of this coupling assembly, and can be operated without removing the motor.

HOLLOW SHAFT ELECTRIC MOTOR
Ruggedly constructed hollow-shaft motor features an adjusting nut to compensate for pump impeller wear. The nut is positioned on top of the motor for easy access.

COMBINATION DRIVES
Used in installations where unintentional pump stoppage is not desirable. The unit is normally driven by the electric motor, but a stationary engine, coupled to the right angle gearbox shaft, is kept on a stand-by basis to take over as prime mover should the supply or electricity to the motor be interrupted.

Submersible Motors

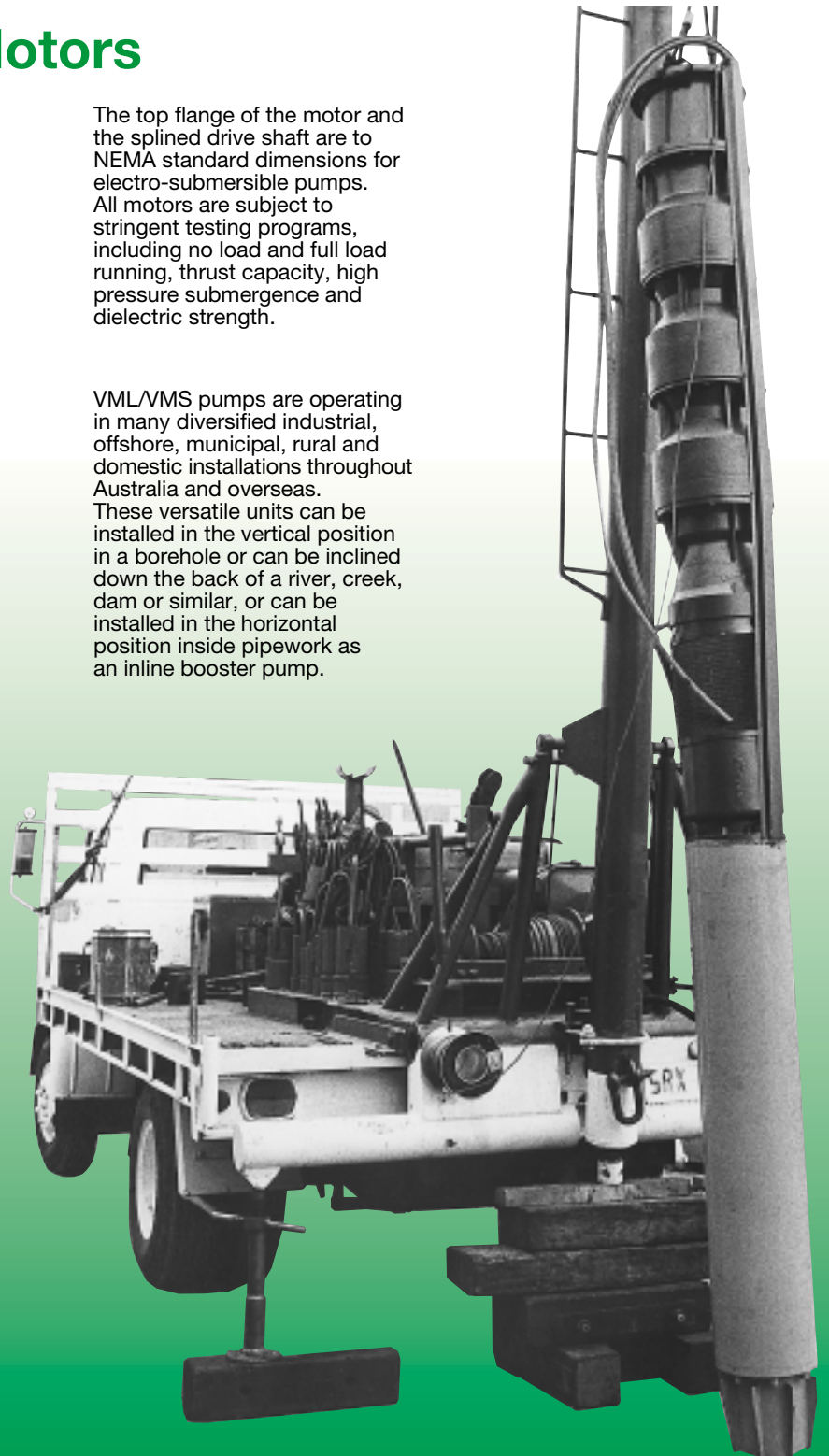
The VMS Submersible range of pumps can be fitted with a choice of submersible electric motors in sizes from 1 kW single phase to 110 kW three phase, with up to 380 kW motors available to special order.

The top flange of the motor and the splined drive shaft are to NEMA standard dimensions for electro-submersible pumps. All motors are subject to stringent testing programs, including no load and full load running, thrust capacity, high pressure submergence and dielectric strength.

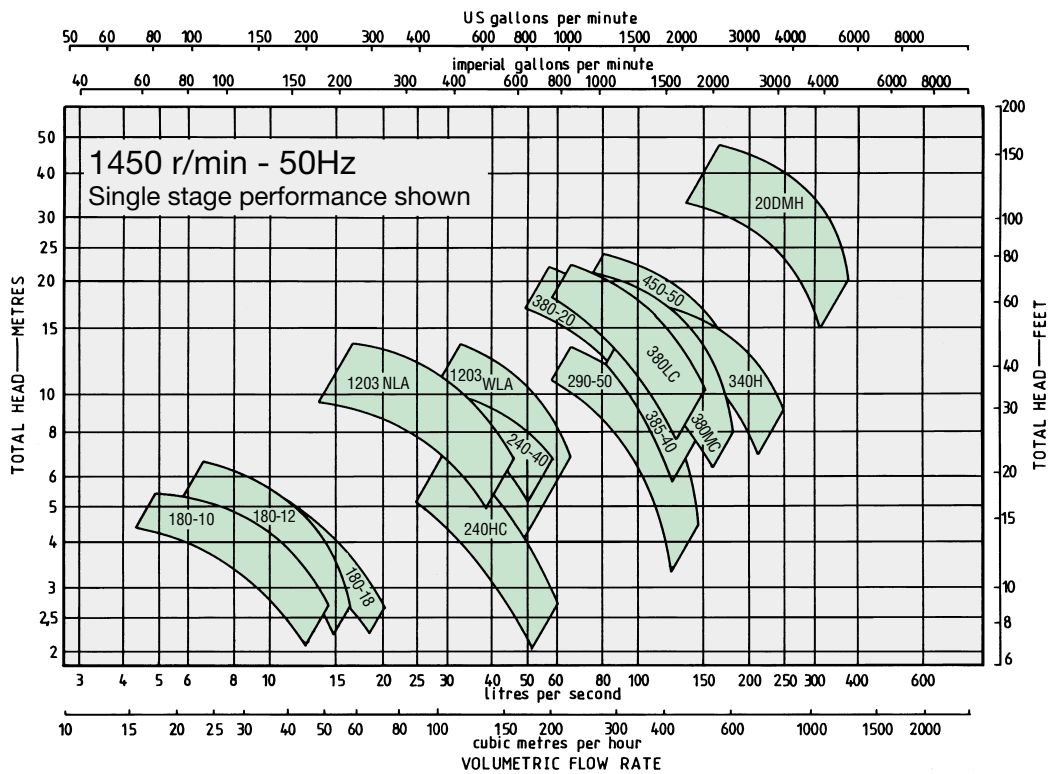
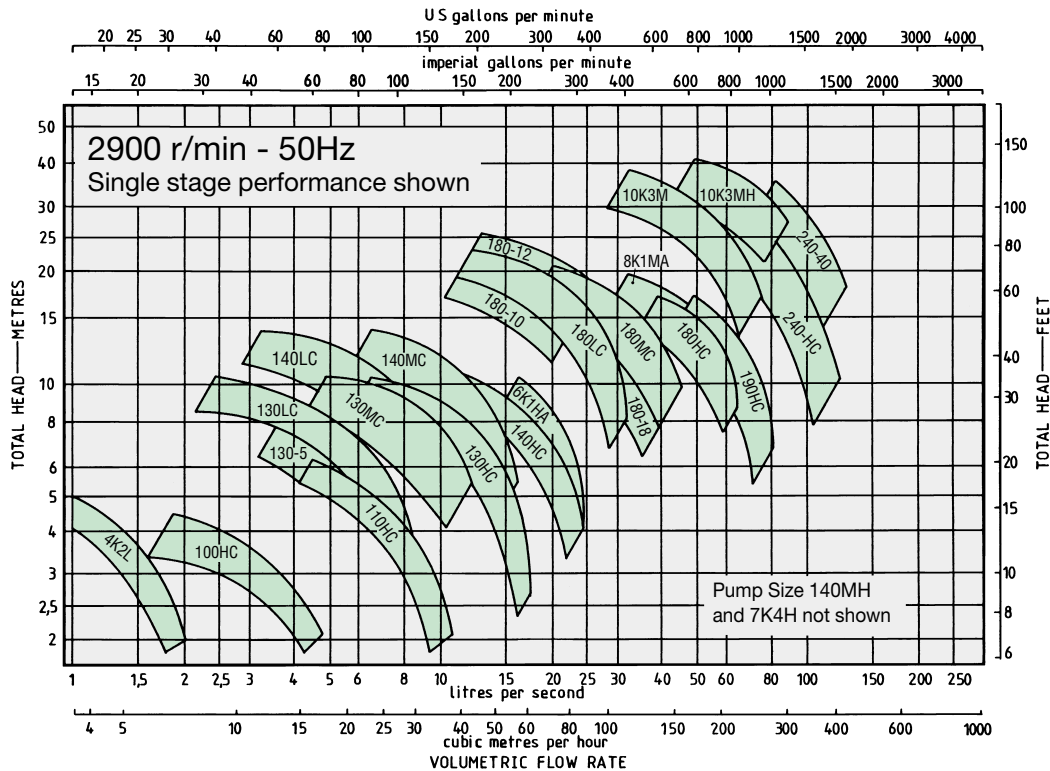
Installations



VML/VMS pumps are operating in many diversified industrial, offshore, municipal, rural and domestic installations throughout Australia and overseas. These versatile units can be installed in the vertical position in a borehole or can be inclined down the back of a river, creek, dam or similar, or can be installed in the horizontal position inside pipework as an inline booster pump.



Selection Guide



Single stage performance shown. Chart is based on full size impellers.

Curves show performance per stage. Higher heads can be obtained by multi-staging, eg. if a single stage pump produces 6m head, ten stages will produce 60m head, with the capacity remaining constant.

Do not exceed maximum number of stages without prior reference to TKL sales office. If pump depth in bore (setting) is more than 100m, also obtain approval from TKL sales office.



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For further information, sales, service or technical assistance, consult your telephone directory for nearest sales office.
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